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NEWS	1		Web Page for STN Seminar Schedule - N. America
NEWS	2	JAN 02	STN pricing information for 2008 now available
NEWS	3	JAN 16	CAS patent coverage enhanced to include exemplified prophetic substances
NEWS	4	JAN 28	USPATFULL, USPAT2, and USPATOLD enhanced with new custom IPC display formats
NEWS	5	JAN 28	MARPAT searching enhanced
NEWS	6	JAN 28	USGENE now provides USPTO sequence data within 3 days of publication
NEWS	7	JAN 28	TOXCENTER enhanced with reloaded MEDLINE segment
NEWS	8	JAN 28	MEDLINE and LMEDLINE reloaded with enhancements
NEWS	9	FEB 08	STN Express, Version 8.3, now available
NEWS	10	FEB 20	PCI now available as a replacement to DPCI
NEWS	11	FEB 25	IFIREF reloaded with enhancements
NEWS	12	FEB 25	IMSPRODUCT reloaded with enhancements
NEWS	13	FEB 29	WPINDEX/WPIDS/WPIX enhanced with ECLA and current U.S. National Patent Classification
NEWS	14	MAR 31	IFICDB, IFIPAT, and IFIUDB enhanced with new custom IPC display formats
NEWS	15	MAR 31	CAS REGISTRY enhanced with additional experimental spectra
NEWS	16	MAR 31	CA/CAplus and CASREACT patent number format for U.S. applications updated
NEWS	17	MAR 31	LPCI now available as a replacement to LDPCI
NEWS	18	MAR 31	EMBASE, EMBAL, and LEMBASE reloaded with enhancements
NEWS	19	APR 04	STN AnaVist, Version 1, to be discontinued
NEWS	20	APR 15	WPIDS, WPINDEX, and WPIX enhanced with new predefined hit display formats
NEWS	21	APR 28	EMBASE Controlled Term thesaurus enhanced
NEWS	22	APR 28	IMSRESEARCH reloaded with enhancements
NEWS	23	MAY 30	INPAFAMDB now available on STN for patent family searching
NEWS	24	MAY 30	DGENE, PCTGEN, and USGENE enhanced with new homology sequence search option
NEWS	25	JUN 06	EPFULL enhanced with 260,000 English abstracts
NEWS	26	JUN 06	KOREAPAT updated with 41,000 documents
NEWS	27	JUN 13	USPATFULL and USPAT2 updated with 11-character patent numbers for U.S. applications
NEWS	28	JUN 19	CAS REGISTRY includes selected substances from web-based collections

NEWS EXPRESS FEBRUARY 08 CURRENT WINDOWS VERSION IS V8.3,
AND CURRENT DISCOVER FILE IS DATED 20 FEBRUARY 2008

NEWS HOURS STN Operating Hours Plus Help Desk Availability
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 NEWS IPC8     For general information regarding STN implementation of IPC 8

Enter NEWS followed by the item number or name to see news on that
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=> file registry
COST IN U.S. DOLLARS                                  SINCE FILE      TOTAL
                                                           ENTRY    SESSION
FULL ESTIMATED COST                                         0.21       0.21

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DICTIONARY FILE UPDATES:  18 JUN 2008  HIGHEST RN 1029146-45-9

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=> file registry
COST IN U.S. DOLLARS                                  SINCE FILE      TOTAL
                                                           ENTRY    SESSION
FULL ESTIMATED COST                                         0.46       0.67

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experimental property data in the original document. For information
on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

```
=> s single phase
        610737 SINGLE
             1 SINGLES
        610738 SINGLE
                  (SINGLE OR SINGLES)
         14008 PHASE
L1           0 SINGLE PHASE
                  (SINGLE(W)PHASE)

=> d his

     (FILE 'HOME' ENTERED AT 14:36:10 ON 19 JUN 2008)

     FILE 'REGISTRY' ENTERED AT 14:36:31 ON 19 JUN 2008

     FILE 'REGISTRY' ENTERED AT 14:36:41 ON 19 JUN 2008
L1            0 S SINGLE PHASE

=> file capllus
'CAPLLUS' IS NOT A VALID FILE NAME
SESSION CONTINUES IN FILE 'REGISTRY'
Enter "HELP FILE NAMES" at an arrow prompt (=>) for a list of files
that are available.  If you have requested multiple files, you can
specify a corrected file name or you can enter "IGNORE" to continue
accessing the remaining file names entered.

=> file caplus
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                         ENTRY    SESSION
FULL ESTIMATED COST                                      10.76      11.43

FILE 'CAPLUS' ENTERED AT 14:37:00 ON 19 JUN 2008
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FILE COVERS 1907 - 19 Jun 2008 VOL 148 ISS 25
FILE LAST UPDATED: 18 Jun 2008 (20080618/ED)

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=> d his

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     FILE 'REGISTRY' ENTERED AT 14:36:31 ON 19 JUN 2008

     FILE 'REGISTRY' ENTERED AT 14:36:41 ON 19 JUN 2008
L1            0 S SINGLE PHASE

     FILE 'CAPLUS' ENTERED AT 14:37:00 ON 19 JUN 2008

=> s single phase
       1426083 SINGLE
          3428 SINGLES
       1428994 SINGLE
                    (SINGLE OR SINGLES)
       1883179 PHASE
        385987 PHASES
       2045179 PHASE
                    (PHASE OR PHASES)
L2       33987 SINGLE PHASE
                    (SINGLE(W)PHASE)

=> s l2 and lithium (4a) manganese (4a) oxide
        342704 LITHIUM
           372 LITHIUMS
        342832 LITHIUM
                    (LITHIUM OR LITHIUMS)
        401345 MANGANESE
           113 MANGANESES
        401356 MANGANESE
                    (MANGANESE OR MANGANESES)
       1875086 OXIDE
        361017 OXIDES
       1976771 OXIDE
                    (OXIDE OR OXIDES)
          9809 LITHIUM (4A) MANGANESE (4A) OXIDE
L3         237 L2 AND LITHIUM (4A) MANGANESE (4A) OXIDE

=> d his

     (FILE 'HOME' ENTERED AT 14:36:10 ON 19 JUN 2008)

     FILE 'REGISTRY' ENTERED AT 14:36:31 ON 19 JUN 2008

     FILE 'REGISTRY' ENTERED AT 14:36:41 ON 19 JUN 2008
L1            0 S SINGLE PHASE

     FILE 'CAPLUS' ENTERED AT 14:37:00 ON 19 JUN 2008
L2         33987 S SINGLE PHASE
L3           237 S L2 AND LITHIUM (4A) MANGANESE (4A) OXIDE

=> file registry
COST IN U.S. DOLLARS                            SINCE FILE      TOTAL
                                                     ENTRY    SESSION
FULL ESTIMATED COST                                  11.08      22.51
```

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on property searching in REGISTRY, refer to:

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=> d his

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     FILE 'REGISTRY' ENTERED AT 14:36:31 ON 19 JUN 2008

     FILE 'REGISTRY' ENTERED AT 14:36:41 ON 19 JUN 2008
L1            0 S SINGLE PHASE

     FILE 'CAPLUS' ENTERED AT 14:37:00 ON 19 JUN 2008
L2        33987 S SINGLE PHASE
L3          237 S L2 AND LITHIUM (4A) MANGANESE (4A) OXIDE

     FILE 'REGISTRY' ENTERED AT 14:37:42 ON 19 JUN 2008

=> s li and mn and ni and co and o and 5/elc
        113808 LI
         24364 LIS
        138168 LI
                  (LI OR LIS)
        449739 MN
           383 MNS
        450085 MN
                  (MN OR MNS)
        400459 NI
           557 NIS
        401014 NI
                  (NI OR NIS)
        408926 CO
           859 COS
        409771 CO
                  (CO OR COS)
       2829621 O
      12112744 5/ELC
L4          987 LI AND MN AND NI AND CO AND O AND 5/ELC
```

```
=> s li and mn and ni and co and (cu or al) and o and 6/elc
         113808 LI
          24364 LIS
         138168 LI
                   (LI OR LIS)
         449739 MN
            383 MNS
         450085 MN
                   (MN OR MNS)
         400459 NI
            557 NIS
         401014 NI
                   (NI OR NIS)
         408926 CO
            859 COS
         409771 CO
                   (CO OR COS)
         322212 CU
          12636 CUS
         334835 CU
                   (CU OR CUS)
        3436152 AL
           1887 ALS
        3436159 AL
                   (AL OR ALS)
        2829621 O
        4556400 6/ELC
L5          237 LI AND MN AND NI AND CO AND (CU OR AL) AND O AND 6/ELC

=> d his

     (FILE 'HOME' ENTERED AT 14:36:10 ON 19 JUN 2008)

     FILE 'REGISTRY' ENTERED AT 14:36:31 ON 19 JUN 2008

     FILE 'REGISTRY' ENTERED AT 14:36:41 ON 19 JUN 2008
L1             0 S SINGLE PHASE

     FILE 'CAPLUS' ENTERED AT 14:37:00 ON 19 JUN 2008
L2         33987 S SINGLE PHASE
L3           237 S L2 AND LITHIUM (4A) MANGANESE (4A) OXIDE

     FILE 'REGISTRY' ENTERED AT 14:37:42 ON 19 JUN 2008
L4           987 S LI AND MN AND NI AND CO AND O AND 5/ELC
L5           237 S LI AND MN AND NI AND CO AND (CU OR AL) AND O AND 6/ELC

=> file caplus
COST IN U.S. DOLLARS                            SINCE FILE      TOTAL
                                                     ENTRY    SESSION
FULL ESTIMATED COST                                  73.94      96.45

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```
=> s l4
L6        1072 L4

=> s l5
L7          81 L5

=> d his

     (FILE 'HOME' ENTERED AT 14:36:10 ON 19 JUN 2008)

     FILE 'REGISTRY' ENTERED AT 14:36:31 ON 19 JUN 2008

     FILE 'REGISTRY' ENTERED AT 14:36:41 ON 19 JUN 2008
L1             0 S SINGLE PHASE

     FILE 'CAPLUS' ENTERED AT 14:37:00 ON 19 JUN 2008
L2         33987 S SINGLE PHASE
L3           237 S L2 AND LITHIUM (4A) MANGANESE (4A) OXIDE

     FILE 'REGISTRY' ENTERED AT 14:37:42 ON 19 JUN 2008
L4           987 S LI AND MN AND NI AND CO AND O AND 5/ELC
L5           237 S LI AND MN AND NI AND CO AND (CU OR AL) AND O AND 6/ELC

     FILE 'CAPLUS' ENTERED AT 14:40:20 ON 19 JUN 2008
L6          1072 S L4
L7            81 S L5

=> s l4 and l3
            1072 L4
L8            23 L4 AND L3

=> del l8
DELETE L8? (Y)/N:y

=> d his

     (FILE 'HOME' ENTERED AT 14:36:10 ON 19 JUN 2008)

     FILE 'REGISTRY' ENTERED AT 14:36:31 ON 19 JUN 2008

     FILE 'REGISTRY' ENTERED AT 14:36:41 ON 19 JUN 2008
L1             0 S SINGLE PHASE

     FILE 'CAPLUS' ENTERED AT 14:37:00 ON 19 JUN 2008
L2         33987 S SINGLE PHASE
L3           237 S L2 AND LITHIUM (4A) MANGANESE (4A) OXIDE

     FILE 'REGISTRY' ENTERED AT 14:37:42 ON 19 JUN 2008
L4           987 S LI AND MN AND NI AND CO AND O AND 5/ELC
```

```
L5          237 S LI AND MN AND NI AND CO AND (CU OR AL) AND O AND 6/ELC

     FILE 'CAPLUS' ENTERED AT 14:40:20 ON 19 JUN 2008
L6         1072 S L4
L7           81 S L5

=> s l6 and l3
L8          23 L6 AND L3

=> s l7 and l3
L9           3 L7 AND L3

=> d his

     (FILE 'HOME' ENTERED AT 14:36:10 ON 19 JUN 2008)

     FILE 'REGISTRY' ENTERED AT 14:36:31 ON 19 JUN 2008

     FILE 'REGISTRY' ENTERED AT 14:36:41 ON 19 JUN 2008
L1            0 S SINGLE PHASE

     FILE 'CAPLUS' ENTERED AT 14:37:00 ON 19 JUN 2008
L2        33987 S SINGLE PHASE
L3          237 S L2 AND LITHIUM (4A) MANGANESE (4A) OXIDE

     FILE 'REGISTRY' ENTERED AT 14:37:42 ON 19 JUN 2008
L4          987 S LI AND MN AND NI AND CO AND O AND 5/ELC
L5          237 S LI AND MN AND NI AND CO AND (CU OR AL) AND O AND 6/ELC

     FILE 'CAPLUS' ENTERED AT 14:40:20 ON 19 JUN 2008
L6         1072 S L4
L7           81 S L5
L8           23 S L6 AND L3
L9            3 S L7 AND L3

=> s l8 or l9
L10         24 L8 OR L9

=> d 1-24 ibib ti it abs

L10  ANSWER 1 OF 24  CAPLUS  COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER:        2007:1143104  CAPLUS
DOCUMENT NUMBER:         148:520429
TITLE:                   Effect of Mn content on the structure and morphology
                         of LiNi0.85-xCo0.15MnxO2 cathode materials
AUTHOR(S):               Gu, Yi-jie; Wang, Cui-ling; Liu, Xiu-bo; Huang,
                         Xiao-wen
CORPORATE SOURCE:        College of Materials Science and Eng., SUST, Qingdao,
                         Shandong, 266510, Peop. Rep. China
SOURCE:                  Shandong Keji Daxue Xuebao, Ziran Kexueban (2007),
                         26(3), 68-72
                         CODEN: SDZKF7; ISSN: 1672-3767
PUBLISHER:               Shandong Keji Daxue Xuebao, Ziran Kexueban Bianjibu
DOCUMENT TYPE:           Journal
LANGUAGE:                Chinese
TI   Effect of Mn content on the structure and morphology of
     LiNi0.85-xCo0.15MnxO2 cathode materials
IT   Battery cathodes
     Particle size distribution
     Surface structure
        (effect of manganese content on structure and morphol. of
        LiNi0.85-xCo0.15MnxO2 cathode materials)
```

IT Crystal structure
(of LiNi0.85-xCo0.15MnxO2 cathode materials)
IT 554-13-2, Lithium carbonate 143623-51-2, Cobalt lithium nickel oxide (Co0.15LiNi0.85O2) 193214-53-8, Cobalt lithium manganese nickel oxide (Co0.15LiMn0.1Ni0.75O2) 193215-03-1, Cobalt lithium manganese nickel oxide (Co0.15LiMn0.2Ni0.65O2) 193215-94-0, Cobalt lithium manganese nickel oxide (Co0.15LiMn0.4Ni0.45O2)
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(effect of manganese content on structure and morphol. of LiNi0.85-xCo0.15MnxO2 cathode materials)
AB The metal hydroxide Ni0.85-xCo0.15Mnx(OH)2 precursors with x=0, 0.1, 0.2 and 0.4 were prepared by the co-precipitation method. LiNi0.85-xCo0.15MnxO2 cathode materials were synthesized by mixing Ni0.85-xCo0.15Mnx(OH)2 with Li2CO3 via the solid-state reaction followed by heating in air. The effect of Mn content on the structure and morphol. of LiNi0.85-xCo0.15MnxO2 cathode materials were analyzed by XRD and SEM. X-ray diffraction pattern of LiNi0.85Co0.15O2 exists in little impure phase. With the Mn-doped increases, lithium loss and departure from stoichiometry are decreased, so, single phase and ordered layered materials are formed easily. With the amount increase of Mn content substituted for Ni content, the lattice parameter a exhibits a shrunken trend, the lattice parameter c and the ratio of peak intensities of I003/I104 and c/a increase. SEM micrographs of the precursors and the final product reveal that increasing Mn content not only decreases the particle size, but also narrows the particle size distribution.

L10 ANSWER 2 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2007:1007735 CAPLUS
DOCUMENT NUMBER: 147:505241
TITLE: Effects of abundant Co doping on the structure and electrochemical characteristics of LiMn1.5Ni0.5-xCoxO4
AUTHOR(S): Wu, H. M.; Tu, J. P.; Yuan, Y. F.; Xiang, J. Y.; Chen, X. T.; Zhao, X. B.; Cao, G. S.
CORPORATE SOURCE: Department of Materials Science and Engineering, Zhejiang University, Hangzhou, 310027, Peop. Rep. China
SOURCE: Journal of Electroanalytical Chemistry (2007), 608(1), 8-14
CODEN: JECHES
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
TI Effects of abundant Co doping on the structure and electrochemical characteristics of LiMn1.5Ni0.5-xCoxO4
IT Battery cathodes
(effect of Co doping on characteristics of LiMn1.5Ni0.5-xCoxO4 cathode material for lithium batteries)
IT Secondary batteries
(lithium; effect of Co doping on characteristics of LiMn1.5Ni0.5-xCoxO4 cathode material for lithium batteries)
IT 12016-91-0, Cobalt lithium manganese oxide (Co0.5LiMn1.5O4) 12031-75-3, Lithium manganese nickel oxide (LiMn1.5Ni0.5O4) 288388-00-1, Cobalt lithium manganese nickel oxide (Co0.1LiMn1.5Ni0.4O4) 874383-62-7, Cobalt lithium manganese nickel oxide (Co0.2LiMn1.5Ni0.3O4) 956023-80-6, Cobalt lithium manganese nickel oxide (Co0.4LiMn1.5Ni0.1O4) 956023-82-8, Cobalt

lithium manganese nickel oxide
(Co0.3LiMn1.5Ni0.2O4)
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(effect of Co doping on characteristics of LiMn1.5Ni0.5-xCoxO4 cathode material for lithium batteries)

AB The structure and electrochem. properties of LiMn1.5Ni0.5-xCoxO4 (0.0 ≤ x ≤ 0.5) cathodes for Li-ion batteries were studied by XRD, SEM, cyclic voltammetry (CV) and galvanostatic charge-discharge tests. Cathode materials with different Co contents, synthesized by spray-drying, showed a single-phase spinel structure without impurities. XRD revealed that the lattice parameter decreases and the structural stability improved on increasing the amount of Co substitution. Cyclic voltammetric indicated 3 voltage regions of electrochem. activity with the 3 pairs of peaks related to the redox couples Mn3+/Mn4+, Ni2+/Ni4+ and Co3+/Co4+. The amount of Co doping induced a variation in the CV peak intensity and charge/discharge plateau length. Galvanostatic tests showed that with an increase in the value of x in the composition, the cycling stability improved significantly at high temperature For LiMn1.5Ni1.4Co0.1O4, the initial capacity was >123 mA-h/g and after 20 cycles it was still >115 mA-h/g at 55°. When the value of x is 0.4 or 0.5 the capacity did not fade much for cycling between 3.20 and 4.95 V at 55°.

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 3 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:489386 CAPLUS
DOCUMENT NUMBER: 147:98461
TITLE: Influence of lithium content on performance of layered Li1+z[Ni0.45Mn0.45Co0.1]1-zO2 in lithium ion batteries
AUTHOR(S): Xiao, Jie; Chernova, Natasha A.; Whittingham, M. Stanley
CORPORATE SOURCE: Department of Chemistry, State University of New York at Binghamton, Binghamton, NY, 13902, USA
SOURCE: Materials Research Society Symposium Proceedings (2007), 972(Solid-State Ionics--2006), 301-306
CODEN: MRSPDH; ISSN: 0272-9172
PUBLISHER: Materials Research Society
DOCUMENT TYPE: Journal
LANGUAGE: English

TI Influence of lithium content on performance of layered Li1+z[Ni0.45Mn0.45Co0.1]1-zO2 in lithium ion batteries

IT Battery cathodes
(influence of lithium content on performance of layered Li1+z[Ni0.45Mn0.45Co0.1]1-zO2 cathode materials for lithium ion batteries)

IT Secondary batteries
(lithium; influence of lithium content on performance of layered Li1+z[Ni0.45Mn0.45Co0.1]1-zO2 cathode materials for lithium ion batteries)

IT 405890-05-3, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 914264-00-9, Cobalt lithium manganese nickel oxide (Co0.08Li1.2Mn0.36Ni0.36O2) 942293-33-6, Cobalt lithium manganese nickel oxide (Co0.12Li0.8Mn0.54Ni0.54O2) 942293-34-7, Cobalt lithium manganese nickel oxide (Co0.11Li0.9Mn0.5Ni0.5O2) 942293-35-8, Cobalt lithium manganese nickel oxide (Co0.09Li1.1Mn0.4Ni0.4O2)
RL: PRP (Properties); TEM (Technical or engineered material use); USES

(Uses)
(influence of lithium content on performance of layered Li1+z[Ni0.45Mn0.45Co0.1]1-zO2 cathode materials for lithium ion batteries)

AB Li1+z[Ni0.45Mn0.45Co0.1]1-zO2(0.8≤1+z≤1.2) was synthesized by co-precipitation A 5% excess Li must be added to obtain the desired composition
XRD results show that an apparent single-phase structure appears except for the lowest Li content. The layered character of the structure increases with increasing Li content and Rietveld refinement reveals that cation disorder decreases rapidly as more Li is added. This conclusion is confirmed by magnetic studies in which only Li0.8[Ni0.45Mn0.45Co0.1]1.2O2 and Li0.9(Ni0.45Mn0.45Co0.1)1.1O2 show magnetization hysteresis loops. The electrochem. behavior of this series of samples is compared to find the best Li to transition metal ratio.

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 4 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2007:477577 CAPLUS
DOCUMENT NUMBER: 147:121566
TITLE: Microwave Synthesis of Spherical Li[Ni0.4Co0.2Mn0.4]O2 Powders as a Positive Electrode Material for Lithium Batteries
AUTHOR(S): Lee, Ki-Soo; Myung, Seung-Taek; Sun, Yang-Kook
CORPORATE SOURCE: Center for Information and Communication Material Department of Chemical Engineering, Hanyang University, Seoul, 133-791, S. Korea
SOURCE: Chemistry of Materials (2007), 19(11), 2727-2729 CODEN: CMATEX; ISSN: 0897-4756
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

TI Microwave Synthesis of Spherical Li[Ni0.4Co0.2Mn0.4]O2 Powders as a Positive Electrode Material for Lithium Batteries

IT Secondary batteries
(lithium; microwave synthesis of spherical Li[Ni0.4Co0.2Mn0.4]O2 powders as cathode material for lithium batteries)

IT Battery cathodes
Microwave
(microwave synthesis of spherical Li[Ni0.4Co0.2Mn0.4]O2 powders as cathode material for lithium batteries)

IT Particles
(spherical; microwave synthesis of spherical Li[Ni0.4Co0.2Mn0.4]O2 powders as cathode material for lithium batteries)

IT 602297-53-0P, Cobalt manganese nickel hydroxide (Co0.2Mn0.4Ni0.4(OH)2)
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(in microwave synthesis of spherical Li[Ni0.4Co0.2Mn0.4]O2 powders as cathode material for lithium batteries)

IT 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2)
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(microwave synthesis of spherical Li[Ni0.4Co0.2Mn0.4]O2 powders as cathode material for lithium batteries)

AB Microwave-assisted synthesis, based on hydroxides, was effective at quickly preparing a lithiated transition metal oxide in a short time. With the help of a homogeneous hydroxide, a one-step, single-phase formation was possible and as a result, the well-developed highly crystalline oxide was readily formed by means of microwave irradiation, significantly reducing the reaction time and cost. This synthetic method can be used to prepare almost all kinds of electrode materials needed in the

lithium battery industry.
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 5 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2007:388525 CAPLUS
DOCUMENT NUMBER: 148:82007
TITLE: Electrochemical performances of the layered cathode material LiNi1/3Co1/3Mn1/3O2 doped with Si/F ions
AUTHOR(S): Huang, Yuan-Jun; Gao, De-Shu; Li, Zhao-Hui; Lei, Gang-Tie; Su, Guang-Yao
CORPORATE SOURCE: College of Chemistry, Xiangtan University, Xiangtan, Hunan, 411105, Peop. Rep. China
SOURCE: Wuji Huaxue Xuebao (2007), 23(3), 466-472
CODEN: WHUXEO; ISSN: 1001-4861
PUBLISHER: Wuji Huaxue Xuebao Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
TI Electrochemical performances of the layered cathode material LiNi1/3Co1/3Mn1/3O2 doped with Si/F ions
IT Battery cathodes
(electrochem. performance of layered cobalt lithium manganese nickel oxide cathode material doped with silicon and fluorine ions)
IT 7440-21-3, Silicon, uses 7782-41-4, Fluorine, uses
RL: MOA (Modifier or additive use); USES (Uses)
(electrochem. performance of layered cobalt lithium manganese nickel oxide cathode material doped with silicon and fluorine ions)
IT 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2)
RL: TEM (Technical or engineered material use); USES (Uses)
(electrochem. performance of layered cobalt lithium manganese nickel oxide cathode material doped with silicon and fluorine ions)
AB A modified cathode material of LiNi1/3Co1/3Mn1/3O2 with the layered structure was prepared by composite doping with F and Si ions under oxygen atmospheric using (Ni1/3Co1/3Mn1/3)(OH)2 as the precursor obtained by co-precipitation method. The results of x-ray diffraction anal. show that it remains a well-layered structure with single phase of hexagonal after composite doping. The SEM micrographs indicate that the samples with approximatively spherical shape have a narrow particle size distribution in the range of 0.1-0.2 μm. Cyclic voltammogram measurements suggest that the reversibility of the cathode materials enhances by composite doping during intercalating and de-intercalating. The results of electrochem. impedance spectroscopy indicate that the electrode polarization reduces and hence the increase of the electrochem. reaction impedance of cathode is restrained after composite doping during cycling. The doped materials have an initial discharging capacity of 172.8 mA-h/g at 0.2C of discharging current, and maintain the capacity of 166.4 mA-h/g even after 20 cycles.

L10 ANSWER 6 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2007:235304 CAPLUS
DOCUMENT NUMBER: 148:311250
TITLE: Structural and electrochemical behavior of LiMn0.4Ni0.4Co0.2O2
AUTHOR(S): Ma, Miaomiao; Chernova, Natasha A.; Toby, Brian H.; Zavalij, Peter Y.; Whittingham, M. Stanley
CORPORATE SOURCE: Institute for Materials Research, State University of New York at Binghamton, Binghamton, NY, 13902, USA

SOURCE: Journal of Power Sources (2007), 165(2), 517-534
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

TI Structural and electrochemical behavior of LiMn0.4Ni0.4Co0.2O2

IT Secondary batteries
(lithium; structural and electrochem. behavior of LiMn0.4Ni0.4Co0.2O2)

IT Battery cathodes
Crystal structure
Cyclic voltammetry
Magnetic properties
(structural and electrochem. behavior of LiMn0.4Ni0.4Co0.2O2)

IT 71-48-7, Cobalt acetate 638-38-0, Manganese acetate 1310-65-2, Lithium hydroxide 13138-45-9, Nickel nitrate 128975-24-6, Lithium manganese nickel oxide LiMn0.5Ni0.5O2 1009807-44-6, Lithium manganese nickel oxide (Li0.94Mn0.5Ni0.5O2) 1009807-47-9, Cobalt lithium manganese nickel oxide (Co0.2Li0.47Mn0.4Ni0.4O2) 1009807-49-1, Cobalt lithium manganese nickel oxide (Co0.2Li0.33Mn0.33Ni0.33O2)
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(structural and electrochem. behavior of LiMn0.4Ni0.4Co0.2O2)

IT 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2)
RL: SPN (Synthetic preparation); PREP (Preparation)
(structural and electrochem. behavior of LiMn0.4Ni0.4Co0.2O2)

IT 64-19-7, Acetic acid, uses 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses 7664-39-3, Hydrofluoric acid, uses 7664-93-9, Sulfuric acid, uses
RL: NUU (Other use, unclassified); USES (Uses)
(use of, in delithiation of; structural and electrochem. behavior of LiMn0.4Ni0.4Co0.2O2)

AB Layered LiMn0.4Ni0.4Co0.2O2 with the α-NaFeO2 structure was synthesized by the "mixed hydroxide" method, followed by a high temperature calcination at 800 °C giving a single phase material of surface area 5 m2 g-1. A combined X-ray/neutron diffraction Rietveld refinement showed that the transition metals in the 3b layer are randomly distributed at room temperature, and that only nickel migrates to the lithium layer and in this case 4.4%. Addition of excess lithium reduces the amount of nickel on the lithium sites. The magnetic susceptibilities of the compds. LiMnyNiyCo1-2yO2 (y = 0.5, 0.4, 0.333) follow the Curie-Weiss law above 100 K and are consistent with the presence of Ni2+, Mn4+ and Co3+ cations; their magnetization curves, measured at 5 K and showing a pronounced hysteresis, are also consistent with the nickel content on the lithium sites increasing with decreasing cobalt content. This material shows a stable capacity of 140-170 mA h g-1 for more than 90 cycles within the voltage window of 2.5-4.4 V. The layered rhombohedral structure is maintained as lithium is removed down to at least a lithium content of 0.05; the total volume change on cycling is under 2%. The nickel ions pin the lattice so that MO2 slab sliding to form the 1T structure cannot readily occur. The capability of aqueous acids to leach lithium from the lattice decreases with increasing nickel content in the lithium layer; however, the thermal stability of the delithiated compds. increases with cobalt content.

REFERENCE COUNT: 75 THERE ARE 75 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 7 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2006:1125630 CAPLUS
DOCUMENT NUMBER: 147:192770

TITLE: Effect of Mg-F codoping on electrochemical properties of Li1.1(Ni1/3Co1/3Mn1/3)O2
AUTHOR(S): Liao, Li; Wang, Xian-you; Luo, Xu-fang; Zhuo, Hai-tao; Wang, Xi-min
CORPORATE SOURCE: Department of Chemistry, Xiangtan University, Xiangtan, Hunan, 411105, Peop. Rep. China
SOURCE: Dianyuan Jishu (2006), 30(9), 724-727
CODEN: DIJIFT; ISSN: 1002-087X
PUBLISHER: Dianyuan Jishu Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

TI Effect of Mg-F codoping on electrochemical properties of Li1.1(Ni1/3Co1/3Mn1/3)O2

IT Cathodes
Sol-gel processing
(effect of Mg-F codoping on electrochem. properties of Li1.1(Ni1/3Co1/3Mn1/3)O2)

IT Carbon black, uses
Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(effect of Mg-F codoping on electrochem. properties of Li1.1(Ni1/3Co1/3Mn1/3)O2)

IT Secondary batteries
(lithium; effect of Mg-F codoping on electrochem. properties of Li1.1(Ni1/3Co1/3Mn1/3)O2)

IT 798575-36-7P, Cobalt lithium manganese nickel oxide (Co0.33Li1.1Mn0.33Ni0.33O2)
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(Mg-F co-doped; effect of Mg-F codoping on electrochem. properties of Li1.1(Ni1/3Co1/3Mn1/3)O2)

IT 7439-95-4, Magnesium, uses 7782-41-4, Fluorine, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant, effect of Mg-F codoping on electrochem. properties of Li1.1(Ni1/3Co1/3Mn1/3)O2)

IT 9002-84-0, Polytetrafluoroethylene
RL: TEM (Technical or engineered material use); USES (Uses)
(effect of Mg-F codoping on electrochem. properties of Li1.1(Ni1/3Co1/3Mn1/3)O2)

AB The cathode-active material layered Li1.1[Ni1/3Co1/3Mn(1/3-x)Mgx]O2-yFy ($0 \leq x \leq 0.04$; $0 \leq y \leq 0.04$) was synthesized by sol-gel method. The influence of doping elements on the structural and electrochem. properties of the prepared samples was investigated by atomic absorption spectroscopy (AAS), X-ray diffraction (XRD), scanning electron microscope (SEM) and electrochem. expts. The studies showed that the prepared materials had a typical hexagonal structure with a single phase, and the particle sizes of the samples were distributed uniformly. Li1.1[Ni1/3Co1/3Mn(1/3-0.04)Mg0.04]O2-0.04F0.04 showed an improved cathodic behavior and discharge capacity retention compared with Li1.1(Ni1/3Co1/3Mn1/3)O2 at 0.1 C rate in the voltage range of 3.0-4.3 V. The Li1.1[Ni1/3Co1/3Mn(1/3-0.04)Mg0.04]O2-0.04F0.04 electrode had an initial discharge capacity of 158 mAh/g during the first charge and discharge cycle and a coulombic efficiency of 91.3 %, and the capacity retention at the 20th cycle was 92.1 %. The outstanding electrochem. properties of Li1.1[Ni1/3Co1/3Mn(1/3-0.04)Mg0.04]O2-0.04F0.04 was a promising cathode material for lithium-ion batteries.

L10 ANSWER 8 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2006:1112730 CAPLUS
DOCUMENT NUMBER: 145:492266
TITLE: Process for preparation of cathode material for lithium secondary batteries using transition metal

composite oxide as intermediate product
INVENTOR(S): Xia, Baojia; Zhang, Jian; Han, Xuewu
PATENT ASSIGNEE(S): Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 11pp. CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1847155	A	20061018	CN 2006-10024783	20060316

PRIORITY APPLN. INFO.: CN 2006-10024783 20060316

TI Process for preparation of cathode material for lithium secondary batteries using transition metal composite oxide as intermediate product

IT Transition metal oxides
RL: RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(intermediate in preparation of cathode material for lithium secondary batteries)

IT Battery cathodes
(lithium ion battery; preparation of multibasic cathode material for lithium secondary batteries)

IT 193215-53-1P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.3Ni0.5O2)
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation as cathode active materials for lithium secondary batteries)

IT 546-89-4, Lithium acetate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 1313-13-9, Manganese dioxide, reactions 5931-89-5, Cobalt acetate 7790-69-4, Lithium nitrate 10141-05-6, Cobalt nitrate 12054-48-7, Nickelous hydroxide 13138-45-9, Nickel nitrate 17375-37-0, Manganese carbonate
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of multibasic cathode material for lithium secondary batteries)

AB The title cathode active material is LiNixCoyMn1-x-yO2 (e.g. LiNi0.5Co0.2Mn0.3O2, having α-NaFeO2 type single phase layered structure with spheric shape), wherein x = 0.1-0.8, y = 0.1-0.5, 0.5≤ x+y < 1.0, and is prepared from compound of transition metal such as Ni, Co, and Mn and Li salt by preparing intermediate product transition metal composite oxide, and then mixing with Li salt, calcining. The compound of Ni, Co, and Mn is its oxide, hydroxide, carbonate, nitrate, and/or acetate. The Li salts are at least 2 of lithium carbonate, lithium hydroxide, lithium nitrate, lithium acetate. The cathodic material can be used for lithium-ion battery with low cost and good performance.

L10 ANSWER 9 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2006:1103247 CAPLUS
DOCUMENT NUMBER: 147:192762
TITLE: The effects of extra Li content, synthesis method, sintering temperature on synthesis and electrochemistry of layered LiNi1/3Mn1/3Co1/3O2
AUTHOR(S): Zhang, Lianqi; Wang, Xiaoqing; Muta, Takahisa; Li, Decheng; Noguchi, Hideyuki; Yoshio, Masaki; Ma, Renzhi; Takada, Kazunori; Sasaki, Takayoshi
CORPORATE SOURCE: Department of Applied Chemistry, Saga University, Saga, 840-8052, Japan

SOURCE: Journal of Power Sources (2006), 162(1), 629-635
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
TI The effects of extra Li content, synthesis method, sintering temperature on synthesis and electrochemistry of layered LiNi1/3Mn1/3Co1/3O2
IT Decomposition
(direct, of acetates, as synthesis method; effects of extra Li content, synthesis method, sintering temperature on synthesis and electrochem. of layered LiNi1/3Mn1/3Co1/3O2)
IT Ball milling
Battery cathodes
Surface structure
(effects of extra Li content, synthesis method, sintering temperature on synthesis and electrochem. of layered LiNi1/3Mn1/3Co1/3O2)
IT Secondary batteries
(lithium; effects of extra Li content, synthesis method, sintering temperature on synthesis and electrochem. of layered LiNi1/3Mn1/3Co1/3O2)
IT Drying
(spray; effects of extra Li content, synthesis method, sintering temperature on synthesis and electrochem. of layered LiNi1/3Mn1/3Co1/3O2)
IT 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2)
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(effects of extra Li content, synthesis method, sintering temperature on synthesis and electrochem. of layered LiNi1/3Mn1/3Co1/3O2)
AB The effects of extra Li content, different synthesis method and sintering temperature on synthesis, structure and electrochem. of LiCo1/3Ni1/3Mn1/3O2 were
investigated. It was shown that extra Li content, homogeneous precursor and a high sintering temperature contributed to the formation of single phase compound Extra Li content not only accelerated formation of pure phase due to effectively suppressing development of NiO impurity, but also brought about considerable variations in electrochem. In the case of x = 1.3 (the molar ratio of Li vs. M (M = Co1/3Ni1/3Mn1/3) at starting materials), a plateau-like stage at >4.3 V during the initial charge process was apparently observed, accompanying a remarkably improved initial charge capacity. Different precursors derived from different synthesis methods caused the impressive differences in electrochem. of LiCo1/3Ni1/3Mn1/3O2. Homogeneous precursors derived from spray-drying method resulted in significantly improved electrochem. performances in contrast with ones obtained by direct decomposition of acetates and even subsequent ball-milling. This may be related to the reduced occupancy of transitional metal ions in Li layers, smaller particles size and possibly good material homogeneity in LiCo1/3Ni1/3Mn1/3O2.
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 10 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2006:1077014 CAPLUS
DOCUMENT NUMBER: 146:277578
TITLE: Synthesis and electrochemical performances of LiNi0.4Mn0.4Co0.2O2 cathode material for lithium rechargeable battery
AUTHOR(S): Kim, Hyun-Soo; Kim, Ke-tack; Periasamy, Padikkasu
CORPORATE SOURCE: Korea Electrotechnol. Res. Inst., Changwon, 641-120, S. Korea
SOURCE: Electronic Materials Letters (2006), 2(2), 119-126
CODEN: EMLLAE; ISSN: 1738-8090
PUBLISHER: Korean Institute of Metals and Materials

DOCUMENT TYPE: Journal
LANGUAGE: English
TI Synthesis and electrochemical performances of LiNi0.4Mn0.4Co0.2O2 cathode material for lithium rechargeable battery
IT Battery cathodes
(synthesis and electrochem. performance of cobalt lithium manganese nickel oxide cathode material for lithium rechargeable batteries)
IT 193215-96-2, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2)
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(synthesis and electrochem. performance of cobalt lithium manganese nickel oxide cathode material for lithium rechargeable batteries)
AB Layered LiNi0.4Mn0.4Co0.2O2 powder was synthesized via a solution combustion method using a glycine. The effects of temperature in the heat treatment on the powder and its performance were studied. X-ray diffraction patterns indicated that pure single-phase LiNi0.4Mn0.4Co0.2O2 was obtained. Charge-discharge behaviors indicated that a sample prepared at 750° for 24 h showed the best sp. discharge capacity of 159.5 mA-h/g after the 20th cycle in the voltage between 3.0 and 4.6 V. Electrochem. impedance studies showed a decrease in charge transfer resistance at the high state of charge.
REFERENCE COUNT: 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 11 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2006:1017302 CAPLUS
DOCUMENT NUMBER: 147:98353
TITLE: Effect of Co content on performance of LiAl1/3-xCoxNi1/3Mn1/3O2 compounds for lithium-ion batteries
AUTHOR(S): Hu, Shao-Kang; Chou, Tse-Chuan; Hwang, Bing-Joe; Ceder, Gerbrand
CORPORATE SOURCE: Department of Chemical Engineering, National Cheng-Kung University, Tainan, 701, Taiwan
SOURCE: Journal of Power Sources (2006), 160(2), 1287-1293
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
TI Effect of Co content on performance of LiAl1/3-xCoxNi1/3Mn1/3O2 compounds for lithium-ion batteries
IT Secondary batteries
(lithium, lithium-ion, cathodes; effect of Co content on performance of LiAl1/3-xCoxNi1/3Mn1/3O2 compds. for lithium-ion batteries)
IT 7439-93-2, Lithium, uses 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 894108-26-0 942228-83-3, Aluminum lithium manganese nickel oxide (Al0.33LiMn0.33Ni0.33O2) 942228-84-4 942228-85-5
RL: TEM (Technical or engineered material use); USES (Uses)
(effect of Co content on performance of LiAl1/3-xCoxNi1/3Mn1/3O2 compds. for lithium-ion batteries)
AB Layered LiAl1/3-xCoxNi1/3Mn1/3O2 ($0 \leq x \leq 1/3$) compds. were studied via the combination of computational and exptl. approach. The calculated voltage curve of LiNi1/3Al1/3Mn1/3O2 compound is presented, indicating it is of great potential for a cathode material of lithium-ion batteries. Unfortunately, it was found that the LiNi1/3Al1/3Mn1/3O2 compound without impurity phase could not be synthesized via a sol-gel

process. To obtain a layered compound without impurity phase, partial of Al is replaced by Co in LiNi1/3Al1/3Mn1/3O2 compound in this study. Layered LiAl1/3-xCoxNi1/3Mn1/3O2 (0 ≤ x ≤ 1/3) compds. were synthesized via sol-gel reaction at 900 °C under a oxygen stream. Single phase of the LiAl1/3-xCoxNi1/3Mn1/3O2 in 1/6 ≤ x ≤ 1/3 region could be prepared successfully. The discharge capacity and conductivity increased with an increase in the Co-substitution content. The enhancement of the conductivity and phase purity by the introduction of Co content shows profound influence on the performance of the LiAl1/3-xCoxNi1/3Mn1/3O2 compds.

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 12 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:958625 CAPLUS

DOCUMENT NUMBER: 146:209557

TITLE: Synthesis and electrochemical properties of layered Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz cathode materials prepared by the sol-gel method

AUTHOR(S): Liao, Li; Wang, Xianyou; Luo, Xufang; Wang, Ximing; Gamboa, Sergio; Sebastian, P. J.

CORPORATE SOURCE: College of Chemistry, Xiangtan University, Hunan, 411105, Peop. Rep. China

SOURCE: Journal of Power Sources (2006), 160(1), 657-661 CODEN: JPSODZ; ISSN: 0378-7753

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

TI Synthesis and electrochemical properties of layered Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz cathode materials prepared by the sol-gel method

IT Secondary batteries
(lithium; sol-gel synthesis and electrochem. properties of layered Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz cathode material for lithium batteries)

IT Battery cathodes
Sol-gel processing
(sol-gel synthesis and electrochem. properties of layered Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz cathode material for lithium batteries)

IT 923290-08-8DP, oxygen-deficient 923290-08-8P 923290-09-9P 923290-10-2P 923290-11-3P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sol-gel synthesis and electrochem. properties of layered Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz cathode material for lithium batteries)

AB The cathode-active material, layered Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz (0 ≤ z ≤ 0.1), was synthesized from a sol-gel precursor at 900° in air. The influence of Al-F co-substitution on the structural and electrochem. properties of the as-prepared samples was characterized by XRD, SEM and electrochem. expts. Li[Ni0.333Co0.333Mn0.293Al0.04]O2-zFz has a typical hexagonal structure with a single phase, the particle size of the samples increases with increasing F content. Li[Ni0.333Co0.333Mn0.293Al0.04]O1.95F0.05 showed improved cathodic behavior and discharge capacity retention compared to the undoped samples in the voltage range of 3.0-4.3 V. The electrodes prepared from Li[Ni0.333Co0.333Mn0.293Al0.04]O1.95F0.05 delivered an initial discharge capacity of 158 mA-h/g and the initial coulombic efficiency is 91.3%. The capacity retention at the 20th cycle was 94.9%. Though the F-doped samples had lower initial capacities, they showed

better cycle performance than the F-free material. This is a promising material for Li-ion batteries.
REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 13 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:1053829 CAPLUS
DOCUMENT NUMBER: 144:153324
TITLE: Synthesis of LiCo1/3Ni1/3Mn1/3O2 as a cathode material for lithium ion battery by water-in-oil emulsion method
AUTHOR(S): Tong, Dong-Ge; Lai, Qiong-Yu; Wei, Ni-Ni; Tang, Ai-Dong; Tang, Lian-Xing; Huang, Ke-Long; Ji, Xiao-Yang
CORPORATE SOURCE: College of Chemistry, Sichuan University, Chengdu, 610064, Peop. Rep. China
SOURCE: Materials Chemistry and Physics (2005), 94(2-3), 423-428
CODEN: MCHPDR; ISSN: 0254-0584
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
TI Synthesis of LiCo1/3Ni1/3Mn1/3O2 as a cathode material for lithium ion battery by water-in-oil emulsion method
IT Battery cathodes
(synthesis of cobalt lithium manganese nickel oxide as cathode material for lithium-ion batteries by water-in-oil emulsion method)
IT Emulsions
(water-in-oil; synthesis of cobalt lithium manganese nickel oxide as cathode material for lithium-ion batteries by water-in-oil emulsion method)
IT 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2)
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(synthesis of cobalt lithium manganese nickel oxide as cathode material for lithium-ion batteries by water-in-oil emulsion method)
AB Layered LiCo1/3Ni1/3Mn1/3O2 was synthesized by a newly developed water-in-oil emulsion method. The synthesis process of LiCo1/3Ni1/3Mn1/3O2 was investigated by TG/DTA, FTIR and x-ray diffraction. Li2CO3, NiO, CoO and Mn2O3 are the intermediate products. With the calcination temperature increasing, Li2CO3 undergoes direct reactions with NiO, CoO and Mn2O3 to form LiCo1/3Ni1/3Mn1/3O2. The kinetics of formation of LiCo1/3Ni1/3Mn1/3O2 by the water-in-oil emulsion method is faster than by the conventional solid-state reaction between lithium carbonate and corresponding reactants. The single phase of LiCo1/3Ni1/3Mn1/3O2 was obtained at 650°. It was found that the submicron-size LiCo1/3Ni1/3Mn1/3O2 synthesized at 850° for 4 h in oxygen atmospheric gives the best electrochem. performance, delivering an initial discharge capacity of 157 mA-h/g in the cut-off voltage of 2.7-4.2 V and exhibiting good cycle performance.
REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 14 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:1006766 CAPLUS
DOCUMENT NUMBER: 143:443425
TITLE: Structure, electrochemical properties, and thermal stability studies of Li[Ni0.2Co0.6Mn0.2]O2 - Effect of

synthesis route

AUTHOR(S): Jiang, J.; Eberman, K. W.; Krause, L. J.; Dahn, J. R.
CORPORATE SOURCE: Department of Chemistry, Dalhousie University, Halifax, NS, B3H 3J5, Can.

SOURCE: Journal of the Electrochemical Society (2005), 152(9), A1874-A1878
CODEN: JESOAN; ISSN: 0013-4651
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

TI Structure, electrochemical properties, and thermal stability studies of Li[Ni0.2Co0.6Mn0.2]O2 - Effect of synthesis route

IT Secondary batteries
(lithium; properties of Li[Ni0.2Co0.6Mn0.2]O2 cathode material for lithium batteries synthesized in different ways)

IT Crystal structure
(of Li[Ni0.2Co0.6Mn0.2]O2 cathode material for lithium batteries synthesized in different ways)

IT Battery cathodes
Synthesis
Thermal stability
(properties of Li[Ni0.2Co0.6Mn0.2]O2 cathode material for lithium batteries synthesized in different ways)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
RL: TEM (Technical or engineered material use); USES (Uses)
(electrolyte containing; thermal stability of Li[Ni0.2Co0.6Mn0.2]O2 cathode material for lithium batteries in electrolyte)

IT 21324-40-3, Lithium hexafluorophosphate (LiPF6)
RL: TEM (Technical or engineered material use); USES (Uses)
(electrolyte; thermal stability of Li[Ni0.2Co0.6Mn0.2]O2 cathode material for lithium batteries in electrolyte)

IT 554-13-2, Lithium carbonate (Li2CO3) 1310-65-2, Lithium hydroxide (Li(OH)) 21041-93-0, Cobalt hydroxide (Co(OH)2) 499795-31-2, Cobalt manganese nickel hydroxide (Co0.6Mn0.2Ni0.2(OH)2) 868844-95-5, Cobalt manganese nickel hydroxide (Co0.17Mn0.42Ni0.42(OH)2)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(in synthesis of Li[Ni0.2Co0.6Mn0.2]O2 cathode material for lithium batteries)

IT 170110-41-5P, Cobalt lithium manganese nickel oxide (Co0.6LiMn0.2Ni0.2O2)
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(properties of Li[Ni0.2Co0.6Mn0.2]O2 cathode material for lithium batteries synthesized in different ways)

AB Two Li[Ni0.2Co0.6Mn0.2]O2 samples were synthesized by firing Ni0.2Co0.6Mn0.2(OH)2 coppt. mixed with LiOH or Li2CO3. Two other Li[Ni0.2Co0.6Mn0.2]O2 samples were made from Ni0.416Co0.168Mn0.416(OH)2 coppt. mixed with Co(OH)2 and LiOH or Li2CO3. All samples were single phase according to XRD. The structure and electrochem. properties of the synthesized Li[Ni0.2Co0.6Mn0.2]O2 were compared. The reactivity of the 4 charged Lix[Ni0.2Co0.6Mn0.2]O2 (4.2 V) samples with electrolyte, was examined using accelerating rate calorimetry. All 4 charged Lix[Ni0.2Co0.6Mn0.2]O2 (4.2 V) samples show less reactivity than LixCoO2 (4.2 V) in ethylene carbonate/diethyl carbonate solvent and in LiPF6-based electrolyte. However, Li[Ni0.2Co0.6Mn0.2]O2 synthesized from Ni0.2Co0.6Mn0.2(OH)2 mixed with LiOH or Li2CO3 shows higher thermal stability than Li[Ni0.2Co0.6Mn0.2]O2 made from Ni0.416Co0.168Mn0.416(OH)2 coppt. mixed with Co(OH)2 and LiOH or Li2CO3, even though the particle size of the latter material is larger. The reasons for this surprising result are explained. The safety of Li[NixCo1-2xMnx]O2 materials depends on x and near x = 0 the safest materials are those with the most

homogeneously mixed cations.
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 15 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:1002629 CAPLUS
DOCUMENT NUMBER: 144:91021
TITLE: Electrochemical performance of layered Li[NixCo1-2xMnx]O2 cathode materials synthesized by a sol-gel method
AUTHOR(S): Chen, Ching-Hsiang; Wang, Chih-Jen; Hwang, Bing-Joe
CORPORATE SOURCE: Nanoelectrochemistry Laboratory, Department of Chemical Engineering, National Taiwan University of Science and Technology, Taipei, 106, Taiwan
SOURCE: Journal of Power Sources (2005), 146(1-2), 626-629
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
TI Electrochemical performance of layered Li[NixCo1-2xMnx]O2 cathode materials synthesized by a sol-gel method
IT Battery cathodes
Sol-gel processing
(layered Li[NixCo1-2xMnx]O2 cathode material for lithium batteries synthesized by sol-gel processing)
IT Materials
(layered; layered Li[NixCo1-2xMnx]O2 cathode material for lithium batteries synthesized by sol-gel processing)
IT Secondary batteries
(lithium; layered Li[NixCo1-2xMnx]O2 cathode material for lithium batteries synthesized by sol-gel processing)
IT 128975-24-6P, Lithium manganese nickel oxide (LiMn0.5Ni0.5O2) 193215-96-2P, Cobalt lithium manganese nickel oxide (Co0.2LiMn0.4Ni0.4O2) 346417-97-8P, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 405890-05-3P, Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 468772-63-6P, Cobalt lithium manganese nickel oxide (Co0.25LiMn0.38Ni0.38O2)
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(layered Li[NixCo1-2xMnx]O2 cathode material for lithium batteries synthesized by sol-gel processing)
AB Synthesis and characterization of LiNixCo1-2xMnxO2 ($1/3 \leq x \leq 1/2$) powders prepared by a sol-gel method were studied. The synthesized LiNixCo1-2xMnxO2 materials consisted of a single phase and had a R3m layered structure according to XRD. The particle size distribution of the materials synthesized by the sol-gel process is uniform. Increasing the x value in the LiNixCo1-2xMnxO2 powder leads to a decrease in particle size and it increase its cation mixing. The average particle size for LiNi0.375Co0.25Mn0.375O2 powder is 0.3-0.4 μm. A best sp. capacity of 192 mA-h/g was obtained for a LiNi0.375Co0.25Mn0.375O2 electrode, with good capacity retention when cycled at 0.1 C in the range 3.0 to 4.5 V at room temperature Although structural parameters of LiNi0.375Co0.25Mn0.375O2 powder are similar to those of LiNi1/3Co1/3Mn1/3O2 powder, its sp. capacity is higher due to the increase in the stoichiometry of active Ni sites. The increase in Ni and Mn content can reduce the cost of materials. The cell performance of the LiNixCo1-2xMnxO2 electrode decreases and its cation mixing increases for $x > 0.4$.
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 16 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:1002628 CAPLUS
DOCUMENT NUMBER: 144:91020
TITLE: Synthesis and structural characterization of layered Li[Ni1/3+xCo1/3Mn1/3-2xMox]O2 cathode materials by ultrasonic spray pyrolysis
AUTHOR(S): Park, Sang-Ho; Oh, Sung Woo; Sun, Yang-Kook
CORPORATE SOURCE: Center for Information and Communication Materials, Department of Chemical Engineering, Hanyang University, Seoul, 133-791, S. Korea
SOURCE: Journal of Power Sources (2005), 146(1-2), 622-625
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
TI Synthesis and structural characterization of layered Li[Ni1/3+xCo1/3Mn1/3-2xMox]O2 cathode materials by ultrasonic spray pyrolysis
IT Materials
(layered; structure of layered Li[Ni1/3+xCo1/3Mn1/3-2xMox]O2 cathode material for lithium batteries synthesized by ultrasonic spray pyrolysis)
IT Secondary batteries
(lithium; structure of layered Li[Ni1/3+xCo1/3Mn1/3-2xMox]O2 cathode material for lithium batteries synthesized by ultrasonic spray pyrolysis)
IT Calcination
(spray; structure of layered Li[Ni1/3+xCo1/3Mn1/3-2xMox]O2 cathode material for lithium batteries synthesized by ultrasonic spray pyrolysis)
IT Battery cathodes
(structure of layered Li[Ni1/3+xCo1/3Mn1/3-2xMox]O2 cathode material for lithium batteries synthesized by ultrasonic spray pyrolysis)
IT 346417-97-8P, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 872352-94-8P 872352-95-9P 872352-96-0P
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(structure of layered Li[Ni1/3+xCo1/3Mn1/3-2xMox]O2 cathode material for lithium batteries synthesized by ultrasonic spray pyrolysis)
AB Mo-doped layered Li[Ni1/3+xCo1/3Mn1/3-2xMox]O2 material was synthesized by ultrasonic spray pyrolysis. A single phase of Li[Ni1/3+xCo1/3Mn1/3-2xMox]O2 was obtained with $0 \leq x \leq 0.05$. Structural and electrochem. properties of Li[Ni1/3+xCo1/3Mn1/3-2xMox]O2 were obtained through XRD, Rietveld refinement and galvanostatic charge/discharge tests. The discharge capacity increased with Mo doping and for x = 0.01 the sample had a discharge capacity of 175 mA-h/g with good capacity retention.
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 17 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:901300 CAPLUS
DOCUMENT NUMBER: 144:90972
TITLE: Structural and electrochemical properties of (1-x) Li[Ni0.20Li0.20Mn0.60]O2-xLi[Co0.50Li0.167Mn0.333]O2 for lithium secondary batteries
AUTHOR(S): Hong, Young-Sik; Park, Yong Joon; Ryu, Kwang Sun; Chang, Soon Ho; Shin, Yu-Ju
CORPORATE SOURCE: Power Source Device Team, Electronics and Telecommunications Research Institute, Daejeon, 305-350, S. Korea

SOURCE: Journal of Power Sources (2005), 147(1-2), 214-219
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
TI Structural and electrochemical properties of (1-x) Li[Ni0.20Li0.20Mn0.60]O2-xLi[Co0.50Li0.167Mn0.333]O2 for lithium secondary batteries
IT Secondary batteries
(lithium; structural and electrochem. properties of (1-x) Li[Ni0.20Li0.20Mn0.60]O2-xLi[Co0.50Li0.167Mn0.333]O2 cathode materials for lithium batteries)
IT Battery cathodes
(structural and electrochem. properties of (1-x) Li[Ni0.20Li0.20Mn0.60]O2-xLi[Co0.50Li0.167Mn0.333]O2 cathode materials for lithium batteries)
IT 184909-55-5, Cobalt lithium manganese oxide (Co0.5Li1.17Mn0.33O2) 503623-42-5, Lithium manganese nickel oxide (Li1.2Mn0.6Ni0.2O2) 872341-05-4, Cobalt lithium manganese nickel oxide (Co0.1Li1.19Mn0.55Ni0.16O2) 872341-06-5, Cobalt lithium manganese nickel oxide (Co0.2Li1.19Mn0.49Ni0.12O2) 872341-07-6, Cobalt lithium manganese nickel oxide (Co0.3Li1.18Mn0.44Ni0.08O2) 872341-08-7, Cobalt lithium manganese nickel oxide (Co0.4Li1.18Mn0.38Ni0.04O2)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(structural and electrochem. properties of (1-x) Li[Ni0.20Li0.20Mn0.60]O2-xLi[Co0.50Li0.167Mn0.333]O2 cathode materials for lithium batteries)
AB (1-X)Li[Ni0.20Li0.20Mn0.60]O2-xLi[Co0.50Li0.167Mn0.333]O2 solid solns. (x = 0, 0.2, 0.4, 0.6, 0.8, and 1.0) were prepared by a combustion method and studied using XRD, galvanostatic charge/discharge cycling, and cyclic voltammetry. XRD showed that single-phase compds. were obtained for all the compns. For cycling in the voltage range 4.8-2.0 V at 100 mA/g and at 30°, the 1st discharge capacity had a maximum value of 265 mA-h/g for Li[Ni0.16Co0.10Li0.193Mn0.547]O2 (x = 0.2). Due to its good cycling characteristics based on structural stability and its capacity, this material can be used in batteries. The discharge capacity decreased upon cycling for x > 0.20. This implies that the charge/discharge mechanism of Ni-rich compds. is different from that of Co-rich compds.
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 18 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:450692 CAPLUS
DOCUMENT NUMBER: 142:449436
TITLE: Solid state synthesis of lithium ion battery cathode material
INVENTOR(S): Eberman, Kevin W.; Scanlan, Jerome E.; Goodbrake, Chris J.
PATENT ASSIGNEE(S): 3M Innovative Properties Company, USA
SOURCE: U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

US 20050112054	A1	20050526	US 2003-723511		20031126
US 7211237	B2	20070501			
CA 2546889	A1	20050623	CA 2004-2546889		20041020
WO 2005056480	A1	20050623	WO 2004-US34750		20041020
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW					
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG					
EP 1689681	A1	20060816	EP 2004-795856		20041020
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK					
CN 1886343	A	20061227	CN 2004-80035045		20041020
BR 2004016961	A	20070221	BR 2004-16961		20041020
JP 2007515366	T	20070614	JP 2006-541171		20041020
MX 2006PA05785	A	20060731	MX 2006-PA5785		20060522
IN 2006CN01833	A	20070608	IN 2006-CN1833		20060525
US 20070202407	A1	20070830	US 2007-742289		20070430
PRIORITY APPLN. INFO.:			US 2003-723511	A	20031126
			WO 2004-US34750	W	20041020

TI Solid state synthesis of lithium ion battery cathode material

IT Secondary batteries
(lithium; solid state synthesis of lithium ion battery cathode material)

IT Battery cathodes
Solid state reaction
(solid state synthesis of lithium ion battery cathode material)

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(solid state synthesis of lithium ion battery cathode material)

IT Milling (size reduction)
(wet; solid state synthesis of lithium ion battery cathode material)

IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(anode; solid state synthesis of lithium ion battery cathode material)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(conductive; solid state synthesis of lithium ion battery cathode material)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(electrolyte; solid state synthesis of lithium ion battery cathode material)

IT 182442-95-1P, Cobalt lithium manganese nickel oxide 227623-80-5P, Cobalt lithium manganese nickel oxide (Co0.8LiMn0.1Ni0.1O2)
RL: CPS (Chemical process); DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(solid state synthesis of lithium ion battery cathode material)

IT 554-13-2, Lithium carbonate 598-62-9, Manganese II carbonate 3333-67-3, Nickel carbonate 21041-93-0, Cobalt II hydroxide
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(solid state synthesis of lithium ion battery cathode material)

IT 24937-79-9, Kynar 461
RL: DEV (Device component use); USES (Uses)
(solid state synthesis of lithium ion battery cathode material)

AB Single-phase lithium-transition metal oxide compds. containing cobalt, manganese and nickel can be prepared by wet milling cobalt-, manganese-, nickel- and lithium-containing oxides or oxide precursors to form a finely-divided slurry to form a lithium-transition metal oxide compound containing cobalt, manganese and nickel and having a substantially single-phase O3 crystal structure. Water is used for wet milling. Manganese and nickel carbonates are used as precursors. The produced oxide can have the following general formula: Lia[Cox(Ni1/2Mn1/2)1-x]O2 where 0≤a≤1.2 and 0.1≤x≤0.98. The lithium-transition metal oxide is mixed with conductive carbon and a binder, and coating the mixture onto a supporting substrate to form a lithium battery cathode. The battery capacity does not substantially decrease after the battery is charged and discharged between 4.4 and 2.5 V for at least 100 cycles at a 75 mA/g discharge rate.

REFERENCE COUNT: 243 THERE ARE 243 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 19 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:315697 CAPLUS
DOCUMENT NUMBER: 142:358107
TITLE: Single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries
INVENTOR(S): Jordy, Christian; Audry, Claudette; Boeuve, Jean-pierre; Biensan, Philippe; Lecerf, Andre
PATENT ASSIGNEE(S): Saft, Fr.
SOURCE: Eur. Pat. Appl., 15 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1523052	A2	20050413	EP 2004-292397	20041008
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
FR 2860922	A1	20050415	FR 2003-11866	20031010
US 20050112466	A1	20050526	US 2004-960066	20041008
US 7285357	B2	20071023		
JP 2005150093	A	20050609	JP 2004-295689	20041008
PRIORITY APPLN. INFO.:			FR 2003-11866 A	20031010

TI Single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries

IT Carbon black, uses
RL: DEV (Device component use); USES (Uses)
(anode; single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)

IT Battery cathodes
(single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)

IT Fluoropolymers, uses

RL: DEV (Device component use); USES (Uses)
(single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)

IT 848871-46-5, Cobalt lithium manganese nickel oxide (Co0.14Li1.07Mn0.39Ni0.39O2) 848871-50-1, Cobalt lithium manganese nickel oxide (Co0.13Li1.09Mn0.38Ni0.38O2) 848871-59-0
RL: DEV (Device component use); USES (Uses)
(aluminum-doped, cathode; single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(anode; single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)

IT 24937-79-9, Polyvinylidene difluoride
RL: DEV (Device component use); USES (Uses)
(battery separator; single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)

IT 848871-43-2, Cobalt lithium manganese nickel oxide (Co0.14Li1.07Mn0.28Ni0.5O2) 848871-54-5, Cobalt lithium manganese nickel oxide (Co0.13Li1.13Mn0.37Ni0.36O2) 848871-57-8, Cobalt lithium manganese nickel oxide (Co0.12Li1.17Mn0.35Ni0.35O2) 848871-63-6
RL: DEV (Device component use); USES (Uses)
(boron-doped, cathode; single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)

IT 848871-61-4 848871-64-7 848871-67-0 848871-70-5 848871-73-8
RL: DEV (Device component use); USES (Uses)
(cathode; single-phase metal-doped cobalt lithium manganese nickel oxide as cathodes for lithium secondary batteries)

AB An electrochem. active, single-phase LiNO2-type mixed metal oxide, suitable for use as cathodes for secondary lithium batteries, have a general formula of Li(M11-a-b-cLiaM2bM3c)O2, in which a = 0.02-0.25, b <0.30, c <0.30; a + b + c <0.50; M2 is selected from Mg and Zn; M3 is selected from Al, B, and Ga; and M1 = Ni1-x-y-zCoxMnyM4z, in which M4 is selected from Fe, Cu, Ti, Zr, V, Ga, and Si, and y = 0.10-0.55, x <0.70, z <0.30; 1-x-y-z >0.20; and b + c + z >0. The anodes are typically fabricated from carbon, carbon black, and glassy carbon.

L10 ANSWER 20 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2004:621425 CAPLUS
DOCUMENT NUMBER: 141:382011
TITLE: Structural and electrochemical properties of layered Li[Ni0.5Mn0.5]1-xCoxO2 positive materials synthesized by ultrasonic spray pyrolysis method
AUTHOR(S): Oh, Sung Woo; Park, Sang Ho; Park, Chul-Wan; Sun, Yang-Kook
CORPORATE SOURCE: College of Engineering, Center for Information and Communication Materials, Department of Chemical Engineering, Hanyang University, Seungdong-Gu, Seoul, 133-791, S. Korea
SOURCE: Solid State Ionics (2004), 171(3-4), 167-172
CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal
LANGUAGE: English
TI Structural and electrochemical properties of layered Li[Ni0.5Mn0.5]1-xCoxO2 positive materials synthesized by ultrasonic spray pyrolysis method
IT Secondary batteries
(lithium; properties of layered Li[Ni0.5Mn0.5]1-xCoxO2 cathode material for lithium batteries synthesized by ultrasonic spray pyrolysis)
IT Battery cathodes
(properties of layered Li[Ni0.5Mn0.5]1-xCoxO2 cathode material for lithium batteries synthesized by ultrasonic spray pyrolysis)
IT Calcination
(spray; properties of layered Li[Ni0.5Mn0.5]1-xCoxO2 cathode material for lithium batteries synthesized by ultrasonic spray pyrolysis)
IT 7440-02-0, Nickel, occurrence
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(in layered Li[Ni0.5Mn0.5]1-xCoxO2 cathode material for lithium batteries synthesized by ultrasonic spray pyrolysis)
IT 783372-49-6, Lithium manganese nickel oxide (Li1.08Mn0.48Ni0.5O2) 783372-50-9, Cobalt lithium manganese nickel oxide (Co0.05Li1.07Mn0.46Ni0.48O2) 783372-51-0, Cobalt lithium manganese nickel oxide (Co0.1Li1.03Mn0.43Ni0.45O2) 783372-52-1, Cobalt lithium manganese nickel oxide (Co0.15Li1.03Mn0.4Ni0.42O2) 783372-53-2, Cobalt lithium manganese nickel oxide (Co0.2Li1.04Mn0.4Ni0.4O2) 783372-54-3, Cobalt lithium manganese nickel oxide (Co0.34Li1.05Mn0.33Ni0.32O2)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(properties of layered Li[Ni0.5Mn0.5]1-xCoxO2 cathode material for lithium batteries synthesized by ultrasonic spray pyrolysis)
AB Layered spherical Li[Ni0.5Mn0.5]1-xCoxO2 (0≤x≤0.33) powders were synthesized by ultrasonic spray pyrolysis. Single-phase Li[Ni0.5Mn0.5]1-xCoxO2 was obtained for 0≤x≤0.33. Structural and electrochem. properties of the Li[Ni0.5Mn0.5]1-xCoxO2 material were characterized by powder XRD, Rietveld refinement, and galvanostatic charge/discharge tests. The discharge capacity increased linearly with an increase in Co substitution. Li[Ni0.4Mn0.4Co0.2]O2 electrodes had a discharge capacity >175 mA-h/g between 2.8 and 4.4 V with good capacity retention.
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 21 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2003:437424 CAPLUS
DOCUMENT NUMBER: 139:367347
TITLE: Performance of LiFePO4 as lithium battery cathode and comparison with manganese and vanadium oxides
AUTHOR(S): Yang, Shoufeng; Song, Yanning; Ngala, Katana; Zavalij, Peter Y.; Stanley Whittingham, M.
CORPORATE SOURCE: Department of Chemistry and Institute for Materials Research, State University of New York at Binghamton, Binghamton, NY, 13902-6000, USA
SOURCE: Journal of Power Sources (2003), 119-121, 239-246
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
TI Performance of LiFePO4 as lithium battery cathode and comparison with manganese and vanadium oxides
IT Secondary batteries
(lithium; performance of cathode materials for lithium batteries)
IT Carbon black, uses

RL: DEV (Device component use); USES (Uses)
(performance of LiFePO4 ground with carbon black as cathode material for lithium batteries)

IT Battery cathodes
(performance of cathode materials for lithium batteries)

IT 15365-14-7, Iron lithium phosphate (FeLiPO4)
RL: DEV (Device component use); USES (Uses)
(performance of LiFePO4 cathode material for lithium batteries)

IT 620972-98-7, Cobalt lithium manganese nickel oxide (Co0.2Li0-1Mn0.4Ni0.4O2)
RL: DEV (Device component use); USES (Uses)
(performance of LiMn0.4Co0.2Ni0.4O2 cathode material for lithium batteries)

IT 39457-42-6, Lithium manganese oxide
RL: DEV (Device component use); USES (Uses)
(performance of LixMnO2 cathode material for lithium batteries)

IT 151331-57-6D, Vanadate (V4O101-), ammonium manganese
RL: DEV (Device component use); USES (Uses)
(performance of ammonium manganese vanadium oxide cathode material for lithium batteries)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(performance of carbon gel-coated LiFePO4 cathode material for lithium batteries)

IT 56729-39-6, Manganese vanadium oxide
RL: DEV (Device component use); USES (Uses)
(performance of vanadium oxide pillared manganese oxide cathode material for lithium batteries)

AB LiFePO4 was synthesized by a high temperature method and its high purity was confirmed by powder x-ray diffraction and thermal anal. LiFePO4 has a capacity of 136 A-h/kg, 80% of theor. capacity at 1 mA/cm2 at high cathode load levels at room temperature By raising the temperature to 60° or reducing the discharge rate to 0.1 mA/cm2, 100% capacity can be obtained. The method of C addition/coating was not critical, C black being as efficient as in situ formed C coatings. These materials suffer from a low volumetric energy d., which will seriously impact their possible application. Stabilized layered structures of Mn-substituted Ni oxides, such as LiMn0.4Co0.2Ni0.4O2, show a behavior typical of a single phase intercalation reaction, and a reversible capacity of .apprx.180 A-h/kg with an upper voltage cut-off of 4.3 V. Stabilized δ-structures of V pentoxide show capacities approaching 300 A-h/kg, but with a median discharge potential of 2.6 V.

REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 22 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:849981 CAPLUS
DOCUMENT NUMBER: 137:355428

TITLE: Improved cathode compositions for lithium-ion batteries

INVENTOR(S): Lu, Zhonghua; Dahn, Jeffrey R.
PATENT ASSIGNEE(S): 3M Innovative Properties Company, USA

SOURCE: PCT Int. Appl., 33 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002089234	A1	20021107	WO 2002-US7251	20020311

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

US 20030027048	A1	20030206	US 2001-845178	20010427
US 6964828	B2	20051115		
AU 2002250282	A1	20021111	AU 2002-250282	20020311
EP 1390994	A1	20040225	EP 2002-719184	20020311

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

CN 1505847	A	20040616	CN 2002-809014	20020311
JP 2004528691	T	20040916	JP 2002-586424	20020311
TW 560097	B	20031101	TW 2002-91106496	20020401
US 20050170249	A1	20050804	US 2005-52323	20050207
US 7078128	B2	20060718		
US 20060147798	A1	20060706	US 2006-276832	20060316

PRIORITY APPLN. INFO.:	US 2001-845178	A	20010427
	WO 2002-US7251	W	20020311
	US 2005-52323	A1	20050207

TI Improved cathode compositions for lithium-ion batteries

IT Fluoro rubber
RL: MOA (Modifier or additive use); USES (Uses)
(hexafluoropropene-vinylidene fluoride; improved cathode compns. for lithium-ion batteries)

IT Battery cathodes
(improved cathode compns. for lithium-ion batteries)

IT Carbon black, uses
RL: MOA (Modifier or additive use); USES (Uses)
(improved cathode compns. for lithium-ion batteries)

IT Secondary batteries
(lithium; improved cathode compns. for lithium-ion batteries)

IT 128975-24-6P, Lithium manganese nickel oxide LiMn0.5Ni0.5O2 474416-96-1P, Lithium manganese nickel oxide (Li1.06Mn0.51Ni0.39O2) 474416-97-2P, Lithium manganese nickel oxide (Li1.13Mn0.55Ni0.31O2) 474416-98-3P, Lithium manganese nickel oxide (Li1.28Mn0.64Ni0.08O2) 474417-01-1P, Lithium manganese nickel oxide (Li1.22Mn0.61Ni0.17O2) 474417-03-3P, Lithium manganese nickel oxide (Li1.17Mn0.58Ni0.25O2) 474417-05-5P, Cobalt lithium manganese nickel oxide (Co0.26Li1.04Mn0.38Ni0.37O2)
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(improved cathode compns. for lithium-ion batteries)

IT 84-74-2, Dibutyl phthalate
RL: MOA (Modifier or additive use); USES (Uses)
(improved cathode compns. for lithium-ion batteries)

AB A cathode composition for a lithium-ion battery having the formula Li[M1(1-x)Mnx]O2 where 0 < x < 1 and M1 represents one or more metal element, with the proviso that M1 is a metal element other than chromium. The composition is in the form of a single phase having an O3 crystal structure that does not undergo a phase transformation to a spinel crystal structure when incorporated in a lithium-ion battery and cycled for 100 full charge-discharge cycles at 30° and a final capacity of 130 mAh/g using a discharge current of 30 mA/g.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 23 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2002:216203 CAPLUS
DOCUMENT NUMBER: 136:250258
TITLE: Method for preparation of lithiated oxide materials with a well layered crystal structure for battery cathodes
INVENTOR(S): Paulsen, Jens Martin; Kieu, Loan Yen; Ammundsen, Brett Graeme
PATENT ASSIGNEE(S): Ilion Technology Corporation, USA; Pacific Lithium New Zealand Limited
SOURCE: Eur. Pat. Appl., 25 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1189296	A2	20020320	EP 2001-302209	20010309
EP 1189296	A3	20050511		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 20030022063	A1	20030130	US 2001-799935	20010306
US 6660432	B2	20031209		
JP 2002110167	A	20020412	JP 2001-181459	20010615
JP 3571671	B2	20040929		

PRIORITY APPLN. INFO.: US 2000-232551P P 20000914
TI Method for preparation of lithiated oxide materials with a well layered crystal structure for battery cathodes
IT Battery cathodes
Crystal structure
Laminated materials
(method for preparation of lithiated oxide materials with well layered crystal structure for battery cathodes)
IT 142395-58-2P, Lithium nickel oxide (Li0.45Ni0.55O) 403985-61-5P, Lithium nickel oxide (Li0.89Ni1.11O2) 403985-62-6P, Cobalt lithium oxide (Co0.98Li1.02O2) 403985-64-8P, Cobalt lithium oxide (Co0.89Li1.11O2) 403985-65-9P, Cobalt lithium manganese nickel oxide (Co0.05Li1.1Mn0.42Ni0.43O2) 403985-66-0P, Cobalt lithium manganese nickel oxide (Co0.04Li1.13Mn0.41Ni0.42O2) 403985-67-1P, Cobalt lithium manganese nickel oxide (Co0.09Li1.08Mn0.41Ni0.41O2) 403985-68-2P, Cobalt lithium manganese nickel oxide (Co0.09Li1.12Mn0.39Ni0.39O2) 403985-69-3P, Cobalt lithium manganese nickel oxide (Co0.16Li1.06Mn0.39Ni0.39O2) 403985-70-6P, Cobalt lithium manganese nickel oxide (Co0.15Li1.11Mn0.37Ni0.37O2) 403985-71-7P, Cobalt manganese nickel hydroxide oxide 403985-72-8P 403985-73-9P, Cobalt lithium manganese nickel oxide (Co0.15Li1.09Mn0.38Ni0.38O2)
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(method for preparation of lithiated oxide materials with well layered crystal structure for battery cathodes)
AB A single phase cathodic material for use in an electrochem. cell is represented by the formula: Li[LixCoyA1-x-y]O2 wherein A = [MnzNi1-z]; wherein x is a numerical value ranging from

approx. 0.00 to approx. 0.16; wherein y is a numerical value ranging from approx. 0.1 to approx. 0.30; wherein z is a numerical value ranging from approx. 0.40 to approx. 0.65; and wherein Lix is included in transition metal layers of the structure and/or wherein the material comprises a layered R-3m crystal structure having a c/a ratio greater than approx. 1.012.

L10 ANSWER 24 OF 24 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2000:504211 CAPLUS
DOCUMENT NUMBER: 133:269334
TITLE: Preparation and properties of LiCoyMnxNi1-x-yO2 as a cathode for lithium ion batteries
AUTHOR(S): Yoshio, M.; Noguchi, H.; Itoh, J.-i.; Okada, M.; Mouri, T.
CORPORATE SOURCE: Department of Applied Chemistry, Saga University, Saga, 840-8502, Japan
SOURCE: Journal of Power Sources (2000), 90(2), 176-181
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal
LANGUAGE: English
TI Preparation and properties of LiCoyMnxNi1-x-yO2 as a cathode for lithium ion batteries
IT Secondary batteries
(lithium; preparation and properties of lithium cobalt manganese nickel oxide as cathode for lithium ion batteries)
IT Battery cathodes
(preparation and properties of lithium cobalt manganese nickel oxide as cathode for lithium ion batteries)
IT 176206-89-6P, Cobalt lithium manganese nickel oxide Co0.3LiMn0.2Ni0.5O2 193215-00-8P, Cobalt lithium manganese nickel oxide Co0.1LiMn0.2Ni0.7O2 193215-05-3P, Cobalt lithium manganese nickel oxide Co0.2LiMn0.2Ni0.6O2 298689-47-1P, Cobalt lithium manganese nickel oxide (Co0.05LiMn0.2Ni0.75O2)
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation and properties of lithium cobalt manganese nickel oxide as cathode for lithium ion batteries)
IT 1308-06-1, Cobalt oxide co3o4 1310-66-3, Lithium hydroxide monohydrate 12025-99-9, Manganese hydroxide oxide mnooh 12054-48-7, Nickel hydroxide ni(oh)2
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation and properties of lithium cobalt manganese nickel oxide as cathode for lithium ion batteries)
AB The preparation of LiCoyMnxNi1-x-yO2 from LiOH·H2O, Ni(OH)2 and γ-MnOOH in air was studied in detail. Single-phase LiCoyMnxNi1-x-yO2 (0≤y≤0.3 and x=0.2) is obtained by heating at 830-900°. The optimum heating temps. are 850° for y=0-0.1 and 900° for y=0.2-0.3. Excess lithium (1≤z≤1.11 for y=0.2) and the Co doping level (0.05≤y≤0.2) do not significantly affect the discharge capacity of LizCoyMn0.2Ni0.8-yO2. The doping of Co into LiMn0.2Ni0.8O2 accelerates the oxidation of the transition metal ion, and suppresses partial cation mixing. Since the valence of the manganese ion in LiMn0.2Ni0.8O2 is determined to be 4, the formation of a solid solution between LiCoyNi1-yO2 and Li2MnO3 is confirmed.
REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                    79.44     175.89

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                   -19.20     -19.20

 SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 14:41:28 ON 19 JUN 2008
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